

5 September 1997

Mr. Rick Woodard
CALFED Bay-Delta Program
Sacramento, CA

RE: Comments on Water Quality Component Report (August 1997 Draft)

Mr. Woodard:

The U.S. Fish and Wildlife Service thanks CALFED for the opportunity to review the August 1997 draft Water Quality Program Component Report. Enclosed are our comments and recommendations.

GENERAL COMMENTS AND RECOMMENDATIONS:

- Nutrients (nitrogen, phosphorous) should be included as an environmental parameter(s) of concern in Section 3.

Nutrient loading is discussed throughout the report as a water quality issue and concern. For example, high nutrient levels are listed under water quality issues and concerns on page 2-2. Nutrient loading is discussed in the section on environmental water quality issues and concerns (p. 2-4). Nutrients are listed as a parameter of concern for Suisun marsh wetlands in the CALFED problem area and several other Clean Water Act Section 303(d) listed impaired waterbodies that may affect the CALFED problem area (Appendix D). Nutrient loading is a water quality concern in south San Francisco Bay (Hager and Schemel 1996, pp. 189-215 in San Francisco Bay: The Ecosystem), which also is an impaired waterbody that may affect the CALFED problem area. Thus, nutrients (nitrogen and phosphorous) should be included as an environmental parameter of concern.

Furthermore, the Ecosystem Restoration Program Plan (ERPP) states that nutrient processes (e.g., nutrient cycling, primary productivity) are important elements in ecosystem management and restoration. Nutrient processes are an important component of the following ecosystem elements discussed in ERPP: bay-delta aquatic foodweb, natural sediment supply, all of the aquatic and wetland habitats, herbivorous waterfowl (indirectly), invasive aquatic plants, and contaminants. Nutrient dynamics are an important ecological process in all aquatic ecosystems, especially estuaries. Nutrient dynamics in the bay-delta ecosystem need to be understood and monitored to facilitate successful ecosystem restoration and protection.

- A more thorough discussion of coordination of the CALFED water quality program with

other programs in the solution area, especially San Francisco Bay, is needed.

Coordinating scientific and environmental management programs throughout a watershed and adjacent areas is especially important for water quality management. Freshwater flows through the Delta, and thus water management actions, affect water quality in central and south San Francisco Bay (Nichols et al 1986, Science 231: 567-573). The report should give a more complete description of the integration of the CALFED water quality program with existing and proposed water quality programs in the Sacramento River watershed, San Joaquin River watershed, and San Francisco Bay.

- Provide a more complete discussion of the coordination and integration of Water Quality and Ecosystem Restoration programs.

SPECIFIC COMMENTS AND RECOMMENDATIONS:

SECTION 3:

- Light attenuation/penetration or water clarity should be listed (with turbidity or separately) as an environmental parameter of concern.
Light attenuation is discussed as a parameter of concern on p. 3-11. Light attenuation is influenced by other factors in addition to turbidity. Light extinction coefficient is the preferred measure for this parameter. Secchi disk depth (with corresponding correlation/regression factor with extinction coefficient) would also be an acceptable measure.

SECTION 4:

- Sources of Parameters Subsection
Only metals are discussed in any detail. Should include similar discussion for other parameters listed in first paragraph.
- Should include tables for total nitrogen and total phosphorous loadings.

SECTION 5:

- The report presents inaccurate statements about copper toxicity which should be deleted or rewritten. Specifically, the example given on page 5-1 (and E-6) that "an exceedance of copper in the upper Sacramento River during the fall-run chinook salmon juvenile outmigration period might be devastating to the population however, during other times of year (when fall run are not present) there may be virtually no biological impact" is inaccurate and should be deleted or rewritten.

Exceedance of copper objectives can result in toxicity to sensitive life stages of fish and other organisms, including, but not limited to, fall-run chinook salmon. The upper

Sacramento River supports fall, late-fall, spring and winter runs of chinook salmon, as well as steelhead trout. The fall, late-fall and winter runs spawn in the upper Sacramento River and juveniles of all four runs and steelhead outmigrate down the river. Resident rainbow trout also spawn in the Sacramento River and its tributaries and occur in the river year round. When all four runs of chinook salmon are considered, as well as steelhead and resident rainbow trout, juvenile salmonids are present in the upper Sacramento River year round. Thus, exceedance of copper objectives at any time of year may have a biological impact to one or more runs of chinook salmon, or to steelhead or resident trout.

- Impaired Water Bodies Subsection.
 - Discussions of Sacramento River Basin and Delta do not seem to adequately address agricultural sources of water quality problems.
 - San Francisco Bay: Need to define the part of bay included in discussion and CALFED program (does not include central and south SF bay). Should mention nutrient inputs from wastewater treatment plants.

SECTION 6:

- Wastewater Discharges Subsection.
Should include discussion on nitrogen, phosphorous, and organic carbon the major pollutants discharged from wastewater treatment plants.

SECTION 7:

- Need biological success indicators and/or performance measures for actions regarding cadmium, copper, zinc, and mercury. These should be the same as for selenium: Reduce tissue concentrations or body burdens to levels that are not harmful to animals. Appropriate indicator species should be identified for each metal. If these concentrations are not known then appropriate research should be conducted to determine these concentrations (The necessary research could be listed under "Methods" or "Performance Measures").
- Page 7-6; Action: "Reduce the toxic effects of nutrient loadings....", Suggest changing to: "Reduce the adverse ecological and toxic effects of nutrient loadings, including oxygen depletion,...."
- For actions dealing with sediment loading and turbidity, need ecological indicators of success. Are these covered by Basin Plan objectives for turbidity? Need performance measures and success indicators related to light attenuation/penetration and phytoplankton production.
- Wastewater and Industrial Discharges Subsection (pp. 7-7, 7-8)
 - Action (p.7-7) "Reduce the impacts of domestic wastes": include ecological impacts, impacts to environmental uses. Or, formulate a separate action item regarding the

ecological impacts of domestic wastewater discharges, including the effects of organic carbon, nitrogen, and phosphorous loading. This would include developing appropriate methods, performance measures, and success indicators regarding ecological impacts. For example, EPA algal bioassay for eutrophication/primary production.

- Action (p.7-8) "Reduce the toxic impacts of oxygen depleting substances and ..."; Change to: "Reduce the ecological and toxic impacts of oxygen depleting substances, including organic carbon and nutrient loads, and ...". Add EPA algal bioassay for eutrophication to performance measures and indicators of success.
- Indicators of success for reducing toxicity from ammonia and agricultural pesticides action items should be change slightly from "improved survival of test organisms in three species toxicity bioassays" to "no likely significant toxicity to aquatic organisms based on three species toxicity bioassays". Otherwise, good indicators.
- Success indicator for selenium good, well stated. Should use revised (currently being done by USGS/USFWS) or existing ecological risk guidelines for selenium recommended by San Luis Drain Re-Use Technical Advisory Committee.